Translation

PCT/DE2003/002162

PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| Applicant's or agent's file reference FIN 393 PCT | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| International application No. PCT/DE2003/002162 | International filing date (*day/month/year*) 30 June 2003 (30.06.2003) | Priority date (*day/month/year*) 01 July 2002 (01.07.2002) |
| International Patent Classification (IPC) or national classification and IPC H01L 23/552 | | |
| Applicant INFINEON TECHNOLOGIES AG | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| Date of submission of the demand | Date of completion of this report |
|---|---|
| 30 January 2004 (30.01.2004) | 30 November 2004 (30.11.2004) |
| Name and mailing address of the IPEA/EP<br><br>Facsimile No. | Authorized officer<br><br>Telephone No. |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/DE2003/002162

## I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-21, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages 1-27, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the drawings:

pages 1/5-5/5, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/DE2003/002162

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 17-27

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international preliminary examination *(specify):*

☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 17-27 are so unclear that no meaningful opinion could be formed *(specify)*:

See supplemental sheet

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III.1.

See Box V, point 2.

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 1-16 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-16 | NO |
| Industrial applicability (IA) | Claims | 1-16 | YES |
| | Claims | | NO |

2. Citations and explanations

1. Reference is made to the following documents

D1: US2002050632

D2: XP4396464

2. Clarity - Claim 17

In claim 17, the German term "Nutzen" is used to define an object ("für einen Nutzen"). The drawing does not show a "Nutzen". According to the technical dictionary "Ernst Wörterbuch der industriellen Technik, Deutsch-Englisch", the term "Nutzen" means "panel" when used in the context of printed circuit boards. This interpretation does not make any sense in claim 17. For this reason, claim 17 and the claims dependent upon it (claims 18-27) are too unclear to permit an opinion with respect to novelty and inventive step.

3. Inventive Step

3.1. Claim 1

3.1.1. Document D1 (paragraphs [0026] to [0034]; figure 6) discloses: an electronic component (102) with a multi-layered rewiring plate (120) that carries a

circuit chip (300) and links the contact surfaces (240) of the chip to external contacts (280) of the electronic component via rewiring lines, the rewiring plate (120) having at least one structured, magnetically soft ("Mumetal") shielding layer (113) consisting of a metal or a metal alloy.

3.1.2. Document D2 (abstract) discloses that magnetically soft amorphous metal alloys are suitable for shielding purposes. A person skilled in the art would incorporate this feature into the component described in D1 as an alternative to the magnetically soft "Mumetal" disclosed in D1 and would consider this measure a conventional approach that, in view of the contents of the present application and the prior art, does not appear to result in unexpected difficulties or unpredicted effects. Therefore, claim 1 does not appear to satisfy the requirements of PCT Article 33(3).

4. Dependent claims 2-16 do not contain any features that, in combination with the features of any claim to which they refer back, meet the PCT requirements for inventive step. The reasons are as follows:

4.1. Document D1 (claim 10) discloses that the circuit chip has magnetic memory cells. Therefore, claim 2 does not appear to satisfy the requirements of PCT Article 33(3).

4.2. A person skilled in the art would readily use the same shielding device to shield a logic chip as for an MRAM. Therefore, claim 3 does not appear to satisfy the requirements of PCT Article 33(3).

4.3. A person skilled in the art selects the thickness of the shielding layer according to the circumstances; it must be thick enough to provide shielding and thin enough to reduce the stress caused by different CTEs. Therefore, claim 4 does not appear to satisfy the requirements of PCT Article 33(3).

4.4. Document D1 (paragraph [0034]) discloses that the shielding layer has a plurality of stacked shielding films laminated on top each other. Therefore, claim 5 does not appear to satisfy the requirements of PCT Article 33(3).

4.5. Document D2 (figure 4) discloses that an amorphous metal contains cobalt or a cobalt alloy (Co77B23). Therefore, claim 6 does not appear to satisfy the requirements of PCT Article 33(3).

4.6. Document D2 (figure 4) discloses that an amorphous metal has a boron/iron alloy. Therefore, claim 7 does not appear to satisfy the requirements of PCT Article 33(3).

4.7. Document D2 (figure 4) discloses that the amorphous metal (Co77B23) has a saturation induction of between 0.5 and 1 tesla. Therefore, claim 8 does not appear to satisfy the requirements of PCT Article 33(3).

4.8. The features mentioned in claims 9-10 merely correspond to conventional features that a person skilled in the art would readily select (see D2). Therefore, claims 9 and 10 do not appear to satisfy the requirements of PCT Article 33(3).

4.9. Document D1 (paragraph [0034]) discloses that the structured shielding layer is arranged on the external side of the rewiring plate opposite the circuit chip. This implicitly discloses that this shielding film has openings at least for the external contacts (280) arranged in the BGA. Therefore, claim 11 does not appear to satisfy the requirements of PCT Article 33(3).

4.10. It is implicitly clear to a person skilled in the art that a memory chip such as the one disclosed in D1 (paragraph [0034]), which has a shielding layer on both sides of the chip, must have at least one channel bonding opening in order to contact the chip. Therefore, claim 12 does not appear to satisfy the requirements of PCT Article 33(3).

4.11. Document D1 (figure 6) discloses that the structured shielding layer (113) is arranged on the chip side of the rewiring plate (120). As is stated above, it is implicitly clear that this layer must have openings in order to make contact with the PCB. Therefore, claim 13 does not appear to satisfy the requirements of PCT Article 33(3).

4.12. Document D1 (figure 6) discloses that there is a shielding film (110) on the reverse side the circuit chip (300). Therefore, claim 14 does not appear to satisfy the requirements of PCT Article 33(3).

4.13. Document D1 (paragraph [0034]) discloses that the circuit chip has a structured shielding film on its active front side. It is implicitly clear to a person skilled in the art that this layer must have

openings for the contact surfaces of the circuit chips. Therefore, claim 15 does not appear to satisfy the requirements of PCT Article 33(3).

4.14. A person skilled in the art always prefers a high shielding factor. The person would readily select the shielding factor disclosed in claim 16. Therefore, claim 16 does not appear to satisfy the requirements of PCT Article 33(3).